## Amendments to the Drawings:

The attached sheets of drawings includes amendments to Figs. 9 and 10. The order of Figs. 9 and 10 has been reversed. In addition, changes to the numbering of elements in new Fig. 10 are shown.

Also attached are replacement sheets for amended Figs. 9 and 10 and formal drawings for Figs. 3 and 6-7.

Attachment:    Replacement sheets for Figs. 3, 6-7 and 9-10.

Annotated sheets showing changes to Figs. 9 and 10.

19

**REMARKS**

In the specification, the title is amended in view of the Examiner's suggestion. Paragraphs 28-29, 33, 45, 47, 59, 65, 68, 70, 81, 84-89, 91 and 92 are amended to clarify terms in response to the Examiner's objections and to reflect changes to the figures and other minor corrections. No new matter is entered.

In the figures, Figures 9 and 10 are reversed in order, and amendments to the numbering of the elements of Fig. 10 are included in response to the Examiner's objections to the drawings.

Claims 1-17 are pending. Claims 1, 3, 8, 10, 14, 16, and 17 are amended.

Claims 1-4, 7-8, 10 and 14-17 are rejected under 35 U.S.C. § 102(e) as being anticipated by Welsh et al. (US 2004/0117572). Claims 1-4, 7-8, 10 and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by Dunphy et al. (US 5,638,509). Claims 5-6 are rejected under 35 U.S.C. §103(a) as being unpatentable over Welsh in view of De Meno et al. (US 6,721,767). Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Welsh in view of Midgely et al. (US 5,604,862). Claims 11-12 are rejected under 35 U.S.C. §103(a) as being unpatentable over Welsh in view of Nguyen et al. (US 6,021,475). Claim 13 is rejected under 35 U.S.C. §103(a) as being unpatentable over Welsh in view of Nguyen and LeCrone et al. (US 6,631,477).

Welsh

Welsh relates to a method for using snapshots for managing data stores. For example, Welsh generally describes taking a snapshot of a current state of a computer system memory, which may be used for a data restore in the event of failure. See, Welsh ¶51. Although Welsh generally relates to using snapshots for data storage management

20

purposes, Welsh waits for a command to initiate the snapshot. Such a command is described as being user initiated. See, e.g., Welsh ¶ 105, and Figs. 5, 9. There is no discussion in Welsh of automating snapshot initiation or dynamically using snapshots in accordance with one or more criteria, rules or other policy.

In contrast, claim 1, as amended, recites: *in accordance with a criteria specified in a policy*, taking a snapshot of the primary volume. Such a policy is described in the application specification, in one example, as relating to "creating a quick recovery volume, such as how snapshots for the volumes or applications are created or, copied, snapshot and quick recovery volume persistence, data pruning, the destination volume of the quick recovery volume, etc." See, application ¶ 35. Claim 1 further recites: repeating the taking, indexing, and copying steps for a plurality of snapshots, *in accordance with at least a second criteria specified in the policy*. By relating each of the steps for taking, indexing and copying a snapshot of a system with a criteria in a policy, a storage management system can use snapshots dynamically based on one or more criteria which may relate to, for example, a time to take a snapshot, persistence of the snapshot, how the snapshot is indexed or copied, or other criteria. Welsh, by comparison is a static system which takes a snapshot for data storage management purposes only upon a user's command. Thus, it is submitted that claim 1 is allowable over Welsh.


Dunphy

Dunphy also relates data storage management and uses an event log to monitor and track changes to data files. The event log generally includes a list of data files in a system that have been subject to a change since a last data file backup. Although Dunphy

relates generally to managing data storage, Dunphy does not relate to using snapshots in data storage management. Dunphy describes using an event log, stash can and virtual data file back up, however, each of these is described in connection with data files that are deleted, changed or modified. See Dunphy, col. 2, lines 1-25 and col. 4, lines 24-30. By contrast, a snapshot may capture data file information for all files, including data files which have not changed. Thus, a snapshot provides information relating to all files in a system, not just files that have changed.

Even if a snapshot were considered analogous to some aspect of the disclosure in Dunphy, Dunphy does not disclose using any policy, rules or criteria to initiate, manage or otherwise control the use of a snapshot in managing data storage. Indeed, Dunphy describes initiating storage backup operations only by user input, for example, upon an alert that a memory is filled to capacity. See Dunphy, Fig. 5, col. 5, lines 56-62. Thus, Dunphy does not disclose the aspect of claim 1 which recites: *in accordance with a criteria specified in a policy*, taking a snapshot of the primary volume.

For at least the reasons described above, it is submitted that claim 1 is allowable over Dunphy.

Claims 2-10, and 14-17

Claims 2-9 depend from claim 1, thus each is allowable for at least the reasons described above with reference to claim 1. Claims 10 and 14-17 include elements in common with claim 1 and are also allowable for the reasons discussed with reference to claim 1.

Claims 11-13

Claims 11-12 are rejected under 35 U.S.C. § 103(a) over Welsh in view of Nguyen. Claim 13 is rejected under 35 U.S.C. §103(a) over Welsh in view of Nguyen and Le Crone.

Claim 11 recites a method for replacing data in a primary volume stored at a first device associated with a first logical unit number with data in a recovery volume stored at a second device associated with a second logical unit number. The elements of claim 11 include updating a memory to indicate that the primary volume is no longer associated with the first logical unit number; updating the memory to indicate that the recovery volume is no longer associated with the second logical unit number; and updating the memory to indicate that the recovery volume is associated with the first logical unit number. Thus, according to claim 11, a memory is updated to indicate that a recovery volume is associated with a first logical unit number, which was previously associated with a primary volume.

Nguyen, in contrast, describes mapping devices in the opposite manner. In Nguyen, a failed primary device is mapped to its mirrored paired device. See Nguyen col. 7, lines 37-55. Thus, for illustrative purposes, using the terminology of claim 11, in Nguyen, a primary volume is mapped to a second logical unit number. Claim 11 specifically recites that the recovery volume is associated with the first logical unit number. Such association is useful because a system component can access the recovery volume directly as if it were the primary volume. In Nguyen, mapping the primary volume to a second logical unit number may cause confusion, for example, if a flag is set

which indicates that a device is a particular type of device or volume, which may conflict with data associated with a particular address. Furthermore, operations which may be specified in Nguyen to be directed to the primary device will have to take a second step to reach the address of the paired mirror device. The second step may slow down the operation or cause other errors or problems.
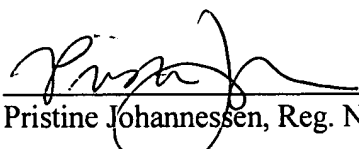
For at least the above reasons, it is submitted that claim 11 is allowable over the cited references. Claims 12-13, which depend from claim 11 are also allowable for at least the same reasons described with reference to claim 11.
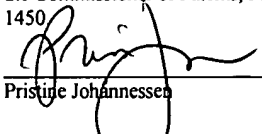
Conclusion

For at least the above reasons, applicants submit that claims 1 –17 are patentable over the cited references. Accordingly, reconsideration and allowance of pending claims 1-17 are respectfully requested. The Examiner is invited to contact the applicants' undersigned representative to expedite prosecution.

Respectfully submitted,

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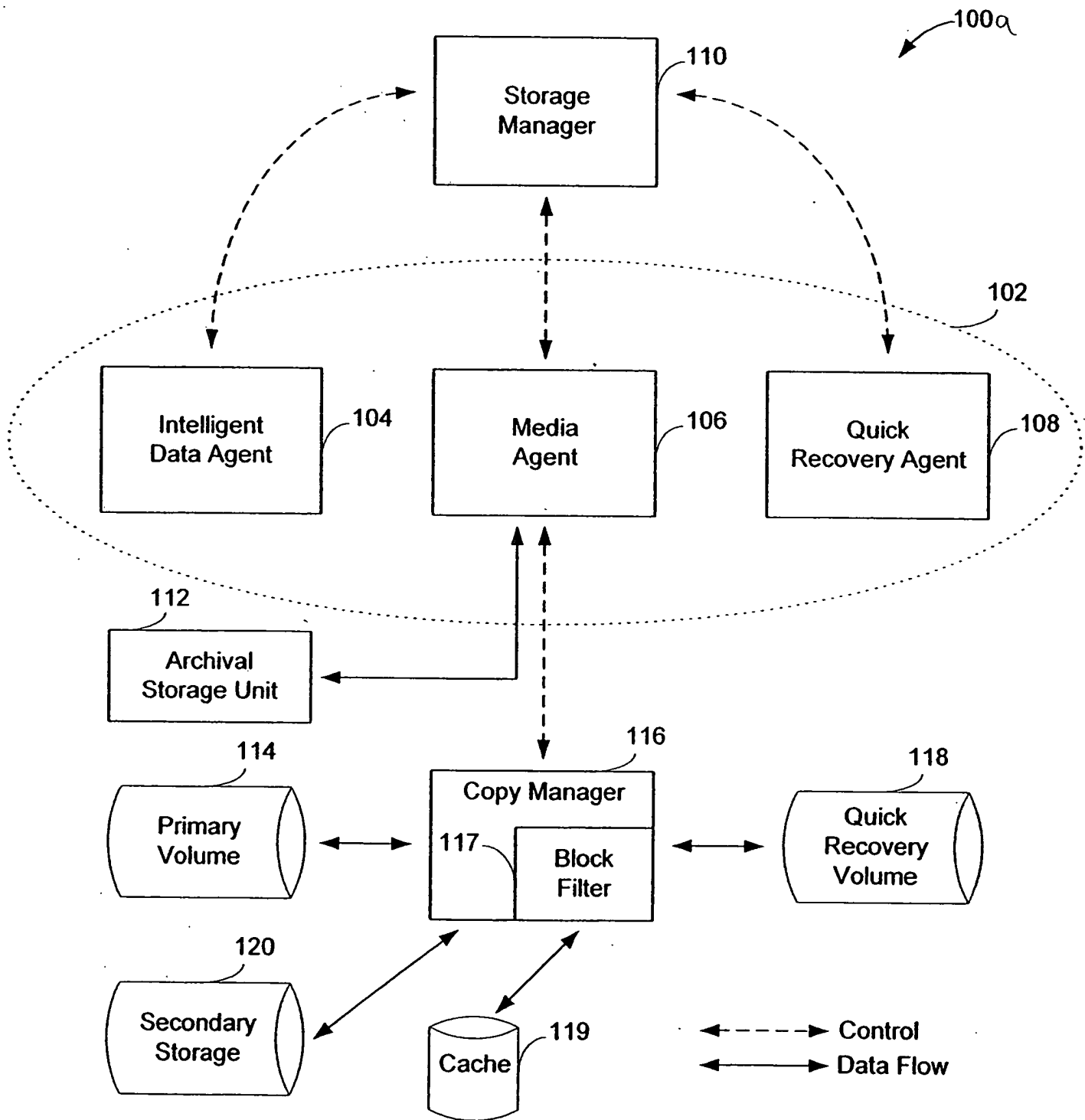Pristine Johannessen                    Date _April 28,2006_
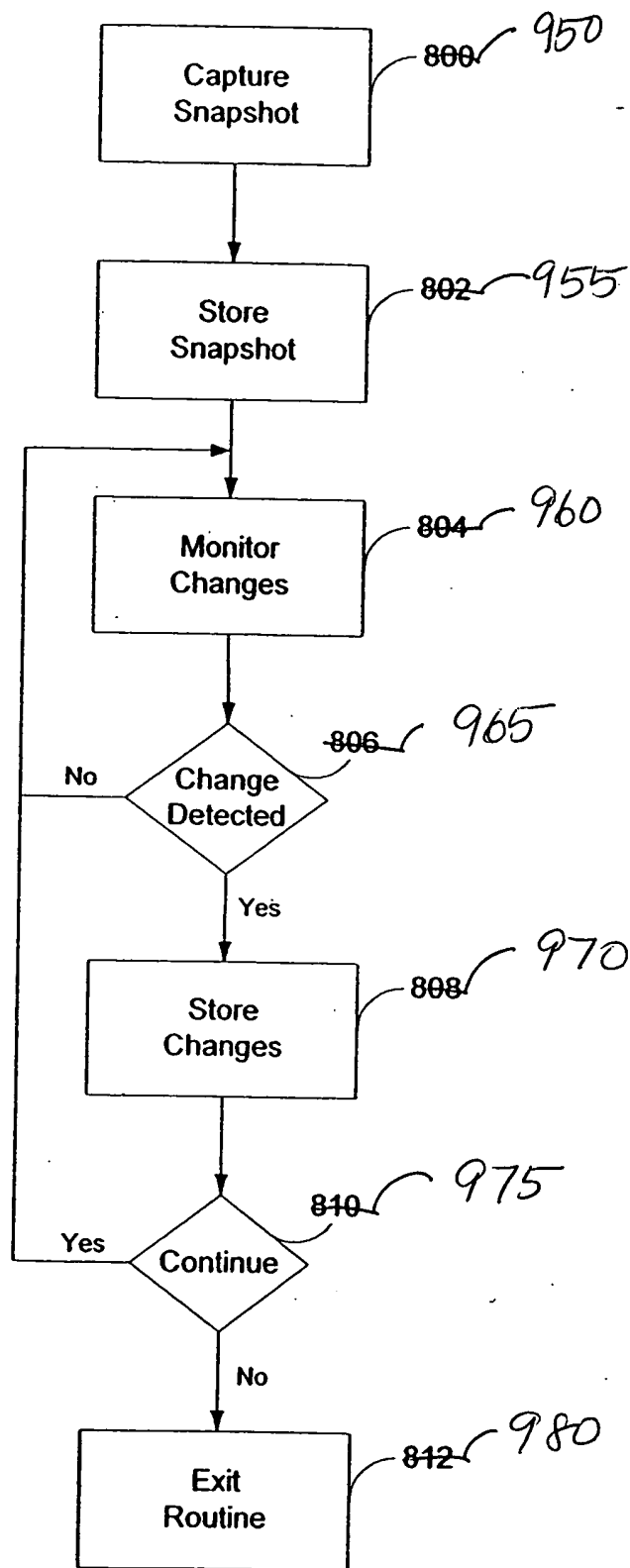
24

Fig. 9

Capture Snapshot ~~800~~ 950

Store Snapshot ~~802~~ 955

Monitor Changes ~~804~~ 960

Change Detected ~~806~~ 965

No

Yes

Store Changes ~~808~~ 970

Continue ~~810~~ 975

Yes

No

Exit Routine ~~812~~ 980

Fig. ~~8~~ 10